

REMARKS

With the addition of new claims 20 to 29, claims 10 to 29 are pending in the present application.

Regarding the rejection of claims 1 to 9, the Examiner's attention is respectfully directed to the "Preliminary Amendment and 37 C.F.R. § 1.125 Substitute Specification Statement," filed on April 27, 2005, in which claims 1 to 9 were canceled. A copy of the "Preliminary Amendment and 37 C.F.R. § 1.125 Substitute Specification Statement" obtained from the PAIR system and bearing a date of receipt by the Office on April 27, 2005 is enclosed herewith. As such, it is respectfully submitted that this rejection is moot, and withdrawal of this rejection is respectfully requested.

Examination of claims 10 to 19, which were added by the "Preliminary Amendment and 37 C.F.R. § 1.125 Substitute Specification Statement," filed on April 27, 2005, is respectfully requested.

Regarding claims 20 to 29, it is respectfully submitted that these claims are patentable over the references relied upon for at least the reason that the references relied upon do not disclose at least the feature of "arranging a backing at an outlet opening of the hole produced by the laser beam, the backing arranged with tilting at a specific angle with respect to at least one of the outlet opening and the workpiece, the angle influencing a form of the outlet opening" as recited in claim 20, or that "a tilting of the backing with respect to at least one of the outlet opening and the workpiece is adjustable for forming the outlet opening" as recited in claim 28.

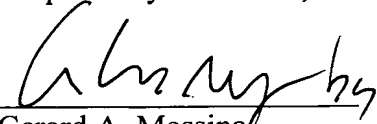
In light of the foregoing, Applicants respectfully submit that all pending claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

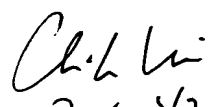
Dated:

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Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : CALLIES et al.
Serial No. : To Be Assigned
Filed : Herewith
For : METHOD AND DEVICE FOR LASER DRILLING
Art Unit : To Be Assigned
Examiner : To Be Assigned

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Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT AND

37 C.F.R. § 1.125 SUBSTITUTE SPECIFICATION STATEMENT

SIR:

Please amend the above-identified application before examination, as set forth below.

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims, which begins on page 3 of this paper.

Remarks begin on page 5 of this paper.

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AMENDMENTS TO THE SPECIFICATION:

In accordance with 37 C.F.R. § 1.12(b)(3), a Substitute Specification (including the Abstract, but without claims) accompanies this Preliminary Amendment. It is respectfully requested that the Substitute Specification (including Abstract) be entered to replace the Specification of record.

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-9. (Cancelled)

10. (New) A method for laser drilling comprising:

acting upon a region of a workpiece by a laser beam, so that a hole is produced in the region;

implementing the method under an adjustable process-gas atmosphere in such a way that, due to a reciprocal action between the laser beam and a process gas, plasma forms in at least one of the region and the hole acted upon by the laser beam; and

arranging a backing at an outlet opening of the hole produced by the laser beam.

11. (New) The method according to claim 10, wherein an inert gas, with an addition of noble gases, is used as the process gas.

12. (New) The method according to claim 11, wherein the inert gas includes nitrogen, and the noble gases include at least one of helium and argon.

13. (New) The method according to claim 10, further comprising pressurizing the process gas at a pressure of maximally 1.5 bar.

14. (New) The method according to claim 10, further comprising adjusting an impingement direction of the process gas by tilting relative to a direction of the laser beam, a tilting angle being up to 15°.

15. (New) The method according to claim 10, wherein a material used for the backing has at least one of thermal and optical properties that influence a form of the outlet opening, the material including at least one of a metallic material and a copper-containing material.

16. (New) The method according to claim 10, wherein the backing is arranged at a distance from at least one of the outlet opening and the workpiece that influences a form of the outlet opening, the distance being between 20 μm and 200 μm .

17. (New) The method according to claim 10, wherein the backing is arranged with tilting at a predetermined angle with respect to at least one of the outlet opening and the workpiece, the tilting influencing a form of the outlet opening, the tilting angle being up to 20°.

18. (New) A device for laser drilling comprising:

means for acting upon a region of a workpiece by a laser beam so as to produce a hole; and

means for adjusting a process-gas atmosphere in at least one of the region and the hole acted upon by the laser beam, in such a way that, due to a reciprocal action between the laser beam and a process gas, plasma forms in at least one of the region and the hole acted upon by the laser beam, a backing being able to be positioned at an outlet opening of the produced hole.

19. (New) The device according to claim 18, wherein the means for adjusting the process-gas atmosphere includes at least one gas nozzle.

Remarks

This Preliminary Amendment cancels, without prejudice, claims 1-9 in the underlying PCT Application No. PCT/DE03/03801 and adds new claims 10-19. The new claims, inter alia, conform the claims to United States Patent and Trademark Office rules and do not add any new matter to the application.

In accordance with 37 C.F.R. § 1.125(b), the Substitute Specification (including Abstract) contains no new matter. The amendments reflected in the Substitute Specification (including Abstract) are to conform the Specification and Abstract to United States Patent and Trademark Office rules or to correct informalities. As required by 37 C.F.R. §§ 1.121(b)(3)(ii) and 1.125(c), a Marked-Up Version of the Substitute Specification comparing the Specification of record and the Substitute Specification also accompanies this Preliminary Amendment. Approval and entry of the Substitute Specification (including Abstract) are respectfully requested.

The underlying PCT Application No. PCT/DE03/03801 includes an International Search Report, dated March 19, 2004, a copy of which is included. The Search Report includes a list of documents that were considered by the Examiner in the underlying PCT application.

Applicants assert that the subject matter of the present application is new, non-obvious, and useful. Prompt consideration and allowance of the application are respectfully requested.

Dated: 4/27/2005

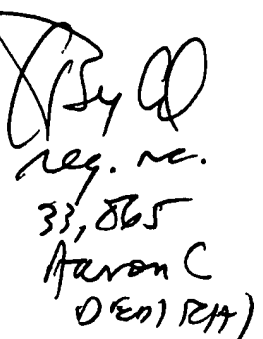
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